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Caterpillars—Agents of Their Own Demise

Many plants produce repellent compounds to protect themselves from hungry insects. But researchers have found that certain species of caterpillars elicit from plants specific chemical aromas that also lure natural enemies of the pests. In other words, the feeding of the caterpillars stimulates release of a plant chemical that summons their predators. These predatory insects, often wasps, lay eggs that hatch into larvae, which then consume their caterpillar hosts.

Until now, researchers have assumed that release of these "herbivore-induced" plant chemicals occurs mainly during the day. But studies have shown that test tobacco plants release the chemicals during the day and night, with some produced mainly at night.

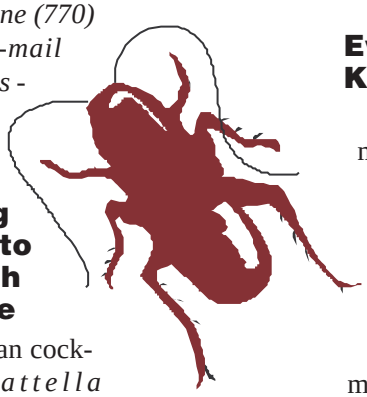
The chemicals elicited were found to be highly repellent to moths searching for egg-depositing sites. The substances signaled to the pests that the crop was infested with predator larvae, thus sending the moths on to other locations. *Consuelo M. De Moraes, USDA-ARS Center for Medical, Agricultural, and Veterinary Entomology, Gainesville, Florida; phone (352) 374-5712, e-mail cdemoraes@gainesville.usda.ufl.edu.*

Bean Plants Repel Nematodes

Incorporating the dried plant material of several unusual types of beans into the soil may reduce the number of root-knot nematodes dwelling there, an ARS study suggests. These minute roundworms in the soil cause yield losses and control costs of $53 million annually in the South alone.

When dried parts of little-known legumes like coffee senna, sun hemp, and jack beans were mixed into potting soils, scientists got reductions as high as 89 percent in the number of nematode galls on the roots of test tomato plants. This nematicidal activity has been attributed to natural substances produced in the plants' seeds, stems, and leaves.

Hundreds of semitropical legume species belonging to 64 genera and collected from around the world are being maintained in ARS' Plant Genetic Resources Conservation Research Unit. Many of these could have multiple uses—from curbing erosion and controlling weeds to yielding pharmaceutical compounds for drugs. *Brad Morris, USDA-ARS Plant Genetic Resources Conservation Research Unit, Griffin, Georgia; phone (770) 229-3253, e-mail s9bm@ars-grin.gov.*

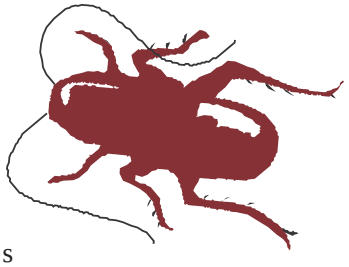


Unlocking the Keys to Cockroach Resilience

The German cockroach—*Blattella germanica*—one of the world's most intrusive species, likes to live indoors with us. And it appears to be increasingly unphased by common insecticides.

Scientists have been studying certain strains of *B. germanica* to see how they develop pesticide resistance. They've discovered that several strains have a unique, membrane-bound protein called esterase, which detoxifies some insecticides. Roaches with the enzyme can withstand a whole lot more insecticide than their unprotected relatives can.

Another key mechanism responsible for roach persistence pertains to what's called knockdown resistance, or *kdr*. This is caused by mutations in nervous system proteins of some insects. Researchers have identified a gene mutation associated with *kdr* in 83 percent of German cockroach field populations surveyed. And they've also found two new mutations that make the roaches more resistant to pyrethroid and related insecticides. *Steven M. Valles, USDA-ARS Center for Medical, Agricultural, and Veterinary Entomology, Gainesville, Florida; phone (352) 374-5834, e-mail svalles@gainesville.usda.ufl.edu.*



Everything You Wanted To Know About Food Safety

Do you ever wonder what the government's doing to address food safety problems? Or what research projects the government's supporting? Or what that investment is actually accomplishing?

Now there's a single place to find answers to those questions and many others. A new web site has been created by the National Agricultural Library's Food Safety Research Information Office in Beltsville, Maryland. The site includes food safety news; information about research projects, spending, and accomplishments; and over 100 links to web-based food safety research information provided by U.S. and foreign governments and educational and professional organizations.

The searchable database offers information on nearly 500 food safety research projects dating from 1998. It is a tool for scientists and policymakers to use in determining research needs and setting priorities in food safety.

The database is also a valuable resource for interested members of the general public. To access and use the database, go to http://www.nal.usda.gov/fsrio. *Yvette Alonso, USDA-ARS National Agricultural Library, Beltsville, Maryland; phone (301) 504-7374, e-mail yalonso@nal.usda.gov.*